

# JPL Website info for Dr. Kevin Peter Hand, Group 3227, Planetary Ices

## Kevin Peter Hand

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## Education:

B.A. Physics, B.A. Psychology, Dartmouth College, Hanover, New Hampshire (1998).

M.S., Mechanical Engineering, Stanford University, Stanford, CA (2002).

Ph.D., Geological & Environmental Sciences, Stanford University, Stanford, CA (2007).

## Research Interests:

Oceans of the outer solar system

Electromagnetic field interactions at icy worlds

Radiolytic chemistry and implications for astrobiology

Spectroscopic biosignatures

Terrestrial cryosphere and climate change record

## Professional Experience:

Scientist, Jet Propulsion Laboratory, California Inst. Tech. (2007-Present).

Europa Flagship Mission Science Definition Team (2008).

Visiting Research Fellow, Dept. of Astrophysical Sciences, Princeton University (2006-2007).

Research Assistant, SETI Institute, (2000).

Research Assistant, Center for Mars Exploration, NASA Ames Res. Ctr. (1998-1999).

## Selected Publications:

**Hand, K.P.**, Chyba, C.F., J.C. Priscu, Carlson, R.W. & K.H. Nealson (in press) Astrobiology and the Potential for Life on Europa. To appear in *Europa*. Eds. R. Pappalardo, W. McKinnon, & K. Khurana. Univ. of AZ Press.

**Hand, K.P.** (in press) The ocean of Europa and implications for habitability and the origin of life. Astrobiology: from simple molecules to primitive life. Eds. V.A. Basiuk and R. Navarro-Gonzalez.

Khurana, K.K., Kivelson, M.G., **Hand, K.P.**, and Russell, C.T. (in press) Electromagnetic induction from Europa's ocean and the deep interior. To appear in *Europa*. Eds. R. Pappalardo, W. McKinnon, & K. Khurana. Univ. of AZ Press.

Cohen, P.A., Bradley, A., Knoll, A.H., Grotzinger, J.P., Jensen, S., Abelson, J., **Hand, K.**, Love, G., Metz, McLoughlin, N., Meister, P., Shepherd, R., Tice, M., Wilson, J.P. (2008) Tubular Compression Fossils from the Ediacaran Nama Group, Namibia. *Journal of Paleontology*.

**Hand, K.P.**, Carlson, R. W., & Chyba, C. F. (2007) Energy, chemical disequilibrium, and geological constraints on Europa. *Astrobiology*. 7:6, 1-18.

**Hand, K. P.**, & Chyba, C.F. (2007) Empirical constraints on the salinity of the europaen ocean and implications for a thin ice shell. *Icarus*. 189:2, 424-438.

**Hand, K. P.**, Carlson, R. W., Cooper, J., & Chyba, C. F. (2006) Clathrate hydrates of oxidants in the ice shell of Europa. *Astrobiology*. 6:3, 463-482.

Chyba, C. F. & **Hand, K. P.** Astrobiology: The Study of the Living Universe (2005) *Annual Reviews of Astronomy and Astrophysics*. 43:2.1-2.44.

**Hand, K.P.**, Carlson, R.W., Sun, H., Anderson, M., Wadsworth, W., Levy, R. (2005) Utilizing active mid-infrared microspectrometry for in-situ analysis of cryptoendolithic microbial communities of Battleship Promontory, Dry Valleys, Antarctica. *Proceedings of SPIE Vol. #5906. Optical Engineering and Instrumentation Instruments, Methods, and Missions for Astrobiology IX*, 31 July- 2 August, 2005.

Anderson, M.S., Andringa, J.M., Carlson, R.W., Conrad, P., Hartford, W., Shafer, M., Soto, A., Tsapin, A.I., Dybwad, J.P., Wadsworth, W., **Hand, K.P.** (2005) Fourier transform infrared spectroscopy for Mars science. *Review of Scientific Instruments*. 76: 034101.

McKay, C. P., **Hand, K. P.**, Doran, P. T., Andersen, D. T. & Priscu, J. C. (2003) Clathrate formation and the fate of noble and biologically useful gases in Lake Vostok, Antarctica. *Geophys. Res. Lett.* Vol. 30, No. 13, 1702.

Zaitseva, L., and **Hand, K. P.** (2003) Nuclear Smuggling Chains: Suppliers, Intermediaries, and End-Users. *American Behavioral Scientist* 46:6, 822-844.

Chyba, C.F. and **Hand, K.P.** (2001) Life without Photosynthesis. *Science* 292, 2026-2027.

**Hand, K.P.** and Chyba, C.F. (2001) Prospects for Life on Europa. In "Frontiers of Life" (L.Celnikier, Ed.) *Proceedings of the Frontiers of Life Conference*, Blois, France, 25th June - 1st July 2000.

Colgate, S.A., Fryer, C.L., and **Hand, K.P.** (1997) Low Mass SN Ia and the Late Light Curve. In "Thermonuclear Supernovae" (P.Ruiz-Lapuente, R. Canal, J. Isern, Eds.) NATO Science Series C. Kluwer Academic Publishers, Boston, MA. p273-302.